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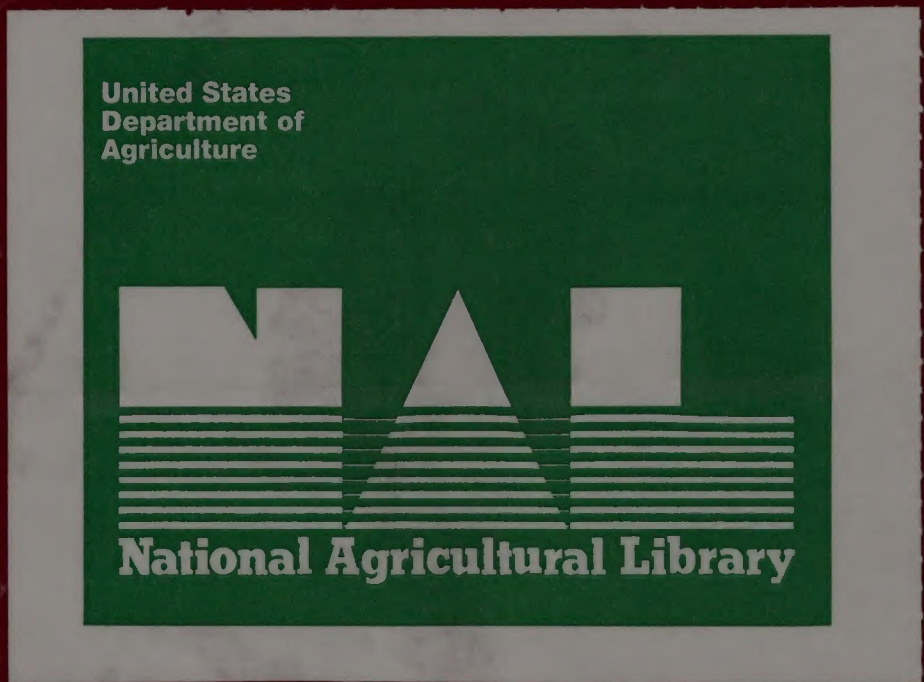
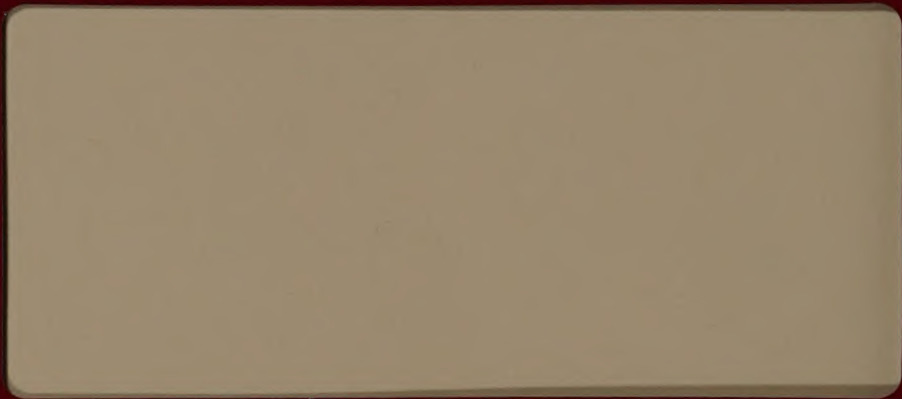
EMPIRICAL ANALYSIS OF RECENTLY FORMED AGRICULTURAL COOPERATIVES

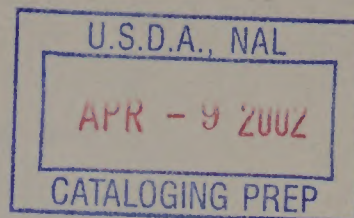
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Agricultural Cooperative Service

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EMPIRICAL ANALYSIS OF RECENTLY FORMED AGRICULTURAL COOPERATIVES

This report presents a survey of recently formed agricultural cooperatives. Economic factors related to the decision to develop a cooperative are analyzed along with key aspects of organization, financing, operation, and membership policy for emerging cooperatives.

A statistical model of the determinants of a successful new cooperative is developed and analyzed. Results indicate the most successful new cooperatives are those involved in initial planning, significant growth in membership, full-time professional management, and a plan to retain retained earnings.

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PREFACE

This report, intended to help farm leaders and their advisers in making decisions concerning new cooperative ventures, is an outcome of a cooperative research agreement between the University of California, Davis, and Agricultural Cooperative Service, USDA. The agreement originated from concerns about the infrequency of cooperative development in recent years and from the high failure rate among those cooperatives that were started.

Research conducted under the agreement consisted of three main components: parts 1 and 2 were conceptual analyses of the economic role of cooperatives in market-oriented economies and the organizational, financial, and operational keys to developing a successful cooperative. Part 3 of the study was an empirical analysis of recently formed agricultural cooperatives. It consisted of identification of recently formed cooperatives through a network including land-grant university faculty, State agricultural council leaders, and bank for cooperatives personnel. Leaders of the cooperatives identified through this process were contacted by phone and requested to complete a mail questionnaire. The questionnaire, based on parts 1 and 2 of the study, was designed to elicit information on the economic bases behind the new cooperatives' inception and key aspects relating to their organization, financing, operations, and membership policy.

This report is based mainly on the third part of the study. It compiles and analyzes the survey responses and includes a statistical analysis of the determinants of success or lack of success among the sample of recently developed cooperatives. A report that includes parts 1 and 2 entitled, "Factors Critical to the Success or Failure of Emerging Agricultural Cooperatives," is available as Giannini Foundation Information Series Report 88-3, from Publications, University of California, Agriculture and Natural Resources, 6701 San Pablo Avenue, Oakland, California 94608.

This study was funded in part through a research agreement with Agricultural Cooperative Service (ACS), USDA, Washington, DC. Many people contributed to the completion of the project and this report in particular. The authors are particularly grateful to John Haas and William Seymour of ACS, and to the many land-grant university faculty, bank for cooperatives personnel, and State agricultural council leaders who helped in locating recently formed cooperatives. We are especially indebted to the many leaders of new cooperatives who shared their experiences and viewpoints with us and to Christina Fitz Gibbon for timely processing of this report.

HIGHLIGHTS AND CONCLUSIONS

Survey responses were obtained from 61 recently formed agricultural cooperatives. About half of the respondents reported that their cooperative was a major success. The other half reported less serendipitous results ranging from minor success to failure.

The most important economic reason motivating development of the sample cooperatives was to obtain bargaining power, cited by 70 percent as an important factor. Other economic conditions considered to be important or minor factors by more than 60 percent of the respondents included the following: existing prices were too low (marketing cooperative) or too high (purchasing cooperative), ineffective or poor quality supplies or services, variability or uncertainty of existing prices and undependable or nonexistent marketing outlet.

Most of the cooperatives had open membership and accepted nonmember business. These characteristics were found to be positively correlated with the probability of success based on statistical analysis. Few people were involved in the initial organizing stages of the cooperatives, but the more involved, the more likely the co-op was to be successful. Similarly, the statistical analysis demonstrated that membership growth from the initial planning stages to the time of start up was also important to success.

About two-thirds of the cooperatives generated initial equity capital from membership fees, and 43 percent issued stock. Only about one-fourth obtained start-up capital from grants.

About one-third of the cooperatives obtained loans from a bank for cooperatives (BC), and one-fourth borrowed from commercial banks. The BC borrowers tended to be the more successful.

In the area of decision making and management, the new cooperatives made extensive use of both public- and private-sector consultants, with cooperatives using public sector assistance tending to be more successful. Voting, with two exceptions, was based on the one member, one-vote principle. Finally, a key success-determining factor was the presence of full-time professional management, which 59 percent of the cooperatives indicated having.

The survey responses and accompanying analysis suggest a number of conclusions and recommendations for cooperative development. These are set forth in the report as 10 sequential steps to success for emerging agricultural cooperatives.

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EMPIRICAL ANALYSIS OF RECENTLY FORMED AGRICULTURAL COOPERATIVES

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Cooperatives have played a fundamental role in the development of America's agriculture. That role has increased in importance through the twentieth century to where about 28 percent of farm products are now marketed through cooperatives at the first-handler or farm-gate level, and 26 percent of farm supplies are purchased from cooperatives.

However, cooperatives overall share of the agricultural economy has not increased in the 1980s. Moreover, decline has been noted in recent years in the number of new agricultural cooperatives being formed, and the failure rate among those that have been organized has been high. Because cooperatives have been a traditional means of self-help for farmers, these trends are potentially troublesome and provide the stimulus for the research reported herein.

Our objective was to conceptually and empirically (1) analyze the economic benefits cooperatives may provide their members, and (2) assess the financial, organizational, operational, and membership policy requirements to developing a successful cooperative. This report focuses mainly on the empirical aspect of the research and, in particular, on analyzing the responses to a survey completed by 61 recently formed agricultural cooperatives. A complete report of the research is available--see the preface to this report for details.

IDENTIFYING NEWLY FORMED AGRICULTURAL COOPERATIVES

To accomplish the research objective, a search was conducted to locate and develop contacts with cooperatives formed since 1970. This task was complicated because no central directory of these organizations existed. Many new cooperatives were quite small and not well known.

Assistance was requested from individuals and organizations most likely to be aware of new agricultural cooperatives. Contacts included:

1. Faculty at land-grant universities with primary responsibilities in the area of cooperatives;
2. Directors of State-level agricultural councils; and
3. Heads of the 12 district banks for cooperatives.

Letters were sent to these individuals informing them of our study and requesting the names, addresses, and contact persons for cooperatives formed since roughly 1970. A particular interest was finding organizations that had begun operations, but had subsequently gone out of business.

Response was high, but several people were unaware of any newly formed cooperatives. Nonetheless, about 150 cooperatives were located in the United States and affiliated territories that met the criteria for inclusion in the study.

Through telephone contact, leaders of these cooperatives were given the purpose of the study and asked permission to mail a survey instrument to be completed. Leaders contacted were either current or former members of boards of directors (usually in the capacity of president) or were professional management. Among respondents, 64 percent were member/patrons of their cooperative and 36 percent were from management.

Contacts were generally willing to participate, and surveys were mailed to people affiliated with 108 different cooperatives. If the survey form was not returned within 4 weeks of mailing, a follow-up letter and an additional survey form was mailed. This methodology produced a response rate of nearly 60 percent.

SURVEY INSTRUMENT

Because the survey encompassed both purchasing and marketing cooperatives and both active and out-of-business cooperatives, four survey instruments were designed, one each for active marketing cooperatives, active purchasing cooperatives, no-longer-operating marketing cooperatives, and no-longer-operating purchasing cooperatives.

Methodology involved designing a preliminary set of survey instruments and submitting them to extensive pretesting from case study analyses of several recently formed California agricultural cooperatives. Personal interviews were conducted by either or both of the authors in the pretesting phase. Based on the availability of cases in California, the pretesting was skewed toward cooperatives marketing fresh and processed fruits and vegetables. Both active and defunct cooperatives were included in the pretesting.

Final versions of the questionnaires were prepared based on results from the pretest phase. Cooperatives used in the pretesting phase were not included in the final survey phase for which results are reported.

Survey questions included the following categories:

1. Basic information on the cooperative including age, membership, products marketed, and position of the respondent;
2. Economic factors motivating the decision to develop the cooperative;
3. Membership factors;
4. Financial issues;
5. Decision-making and management; and
6. Evaluation of the cooperative's success or failure.

Copies of the survey instruments mailed to active marketing and active purchasing cooperatives are included as an appendix to this report. Survey forms sent to leaders of no-longer-active cooperatives differed only slightly to reflect the ex post nature of these organizations.

Where judgmental answers were requested, we allowed respondents to choose from among three categories: For example, A-- an important factor, B-- a minor factor, C-- not a factor. Whenever appropriate, respondents were encouraged to elaborate on answers in space provided.

MAIN RESULTS

Characteristics of Survey Respondents

Sixty-one usable responses were received. Responses emanated from 26 States plus Guam and the Mariana Islands. Hawaii was the most frequently represented State with eight responses, followed by Vermont with six, and California, Minnesota, and Tennessee with five each. A complete distribution of responses by state is provided in Table 1.

The most frequent start-up dates for our respondents were 1984 and 1985 with eight beginning operations in each year. The complete distribution of start-up dates is provided in Table 2.

The most frequent type of cooperatives responding were for fruit and vegetable marketing, with 22 responses (36 percent). Farm supply cooperatives were second most represented with 11 responses. The complete distribution of the sample cooperatives by function is reported in Table 3.

Locating leaders of cooperatives that had gone out of business who were willing to participate in the study was, not surprisingly, difficult. Eight responses from this group were obtained, with the remaining 53 coming from cooperatives that were active at the time of the study.

Survey response data follow for the four main component areas of the questionnaire, economic factors, membership factors, financing, and decision making.

Economic Factors

Several economic benefits that cooperatives may provide their membership are described in the full report. In brief, these benefits derive from a cooperative's prospective ability to remedy certain types of market failure. Markets are said to be "perfect" when many buyers and many sellers trade a standardized product, there is free entry and exit of firms, and all market participants have good information.

Table 1--Cooperatives formed since 1970,
by State or other location

State/location	Number
Alabama	3
Alaska	1
Arkansas	2
California	5
Florida	1
Guam	1
Hawaii	8
Idaho	1
Kentucky	2
Louisiana	2
Maine	1
Mariana Islands	1
Minnesota	5
Missouri	1
Nebraska	2
New Mexico	1
North Carolina	1
North Dakota	2
Oklahoma	1
Oregon	2
Texas	1
Tennessee	5
Vermont	6
Virginia	3
Washington	2
Wisconsin	<u>1</u>
Total	61

Table 2--Start-up dates
for cooperatives responding

Date	Number
Pre 1970	4
1970	1
1971	1
1972	4
1973	2
1974	4
1975	4
1976	4
1977	2
1978	3
1979	2
1980	3
1981	3
1982	4
1983	3
1984	8
1985	8
1986	1

Table 3--Cooperatives by function

Function	Number
Fruit and vegetable marketing	22
Farm supplies	11
Animal products marketing	8
Farm services	5
Nut marketing	4
Grain marketing	4
Other marketing	7
Total	<u>61</u>

When farmers buy or sell in markets that embody these characteristics, they generally receive the best possible terms of trade and can do no better through a cooperative.

However, absence of one or more of the above characteristics induces market failure and the potential for beneficial cooperative development. Question 7 on our survey lists a number of the possible outcomes of market failure to discern their importance in stimulating cooperative development. Question 7a, "prices were too low (marketing co-op) or too high (purchasing co-op)," recognizes the possibility that farmers will not receive or pay fair prices when only one or a few firms buy farm products or sell farm supplies. Question 7b on both forms entertains the possibility that market conditions may cause noncooperatives to ineffectively perform marketing services or offer farmers poor quality products.

Question 7c, "prices were subject to too much variability or uncertainty," captures the possible risk-reducing role of cooperatives. Question 7d on both forms reflects cooperatives' possible role when no other handlers will operate in a market or the similar problem that buyers and sellers may be present but cannot be counted on to meet farmers' buying and selling needs. Question 7e on the marketing form, "individual farmers lacked bargaining power," is intended to capture both farmers' difficulties in dealing with powerful buyers and their aspirations to raise market prices through collective marketing. Space was also provided for respondents to list and rank additional factors. Respondents were asked to indicate whether each of the above considerations was A-- an important factor, B-- a minor factor, or C-- not a factor in the decision to organize a cooperative. The quantitative responses to these questions are reported in Table 4. In addition to indicating the percentage responses to the A, B, and C categories, the table also reports a mean or average rating based on assigning the values

1.0, 2.0, and 3.0 to A, B, and C responses, respectively. Thus, factors with a lower mean score were judged to be relatively more important than factors with a higher mean score. All factors were deemed to be very important or of minor importance by more than 60 percent of the respondents. The most important factor for marketing cooperatives was bargaining power, which 70 percent cited as a major factor underlying their organizing effort. Representative respondent comments about the bargaining power factor included:

- o Produce buyers found it easy to pit one farm against another; farmers had no clout.
- o Individual farmers lacked quantity to bargain effectively.
- o Buyers would tend to take advantage of individual farmers.

Among the farm supply and service cooperatives, the most important factor was undependable or nonexistent source of supplies, which 65 percent rated as a very important factor in the decision to organize a cooperative. Representative comments included:

- o Plantation stopped selling fertilizer and herbicides to growers.
- o No other almond hullers in this area would handle the new producing trees.

Table 4-- Importance of alternative economic factors in the decision to form a cooperative

Factor	Important	Minor	Not a Factor	Mean Score <u>1/</u>
--Percentage Responses--				
7a: Prices too low (high)	44.3	23.0	32.8	1.89
7b: Ineffective or poor quality supplies or service	54.1	16.4	29.5	1.75
7c: Price variability/uncertainty	37.7	26.2	36.1	1.98
7d: Undependable/nonexistent market outlet	65.6	9.8	24.6	1.59
7e: Bargaining power (mtg. co-op only)	70.0	10.0	20.0	1.50

1/ 1 = important factor; 2 = minor factor; and 3 = not a factor

- o No supplies/services on this island.
- o Tractor services were not available.

Although respondents commented extensively in the open response categories (7f and 7g on the marketing form, 7e and 7f on the purchasing form), their responses tended to be restatements of the same basic economic problems suggested in the main response categories.

Membership Factors

Several concerns were membership growth from initial planning to start-up to current size, the decision to open or close the membership, and policy toward nonmembers.

Response to question 4 concerning the number of producers involved in the initial planning stages confirmed the hypothesis that a few people often end up doing much of the costly preliminary work in a cooperative. Ten or fewer people were involved in 54 percent of the cases and 20 or fewer were involved in 79 percent.

To measure the growth of the membership from the time of initial planning to start-up, a growth coefficient (GC) was computed as the ratio:

$$GC = \frac{\text{Members involved in initial planning stage}}{\text{Members at the time of initial operations}}$$

The mean value for the growth coefficient in the sample was 0.65, indicating that on average the cooperatives failed to double in size as they evolved from planning into an actual operating entity. Statistical results in the next section demonstrate that the smaller growth coefficient (i.e., the greater the growth rate) the greater the prospects for success in a cooperative.

Seventy-two percent of the cooperatives reported having open membership (question 16a). Open membership is one of the Rochdale principles, but, as part 2, Section IA of our full report indicates, open membership may not always be the most prudent membership policy. Thus, we were interested in the cooperatives' reasons for having an open or closed membership policy.

Question 17 on both forms was designed to generate this information. For open membership cooperatives, factors were: more members make the cooperative run more efficiently (a physical economies of size factor), more members give the cooperative more bargaining power (the market power argument) and open membership is the cooperative way of doing business (the Rochdale principle).

Responses were generated using the A-- important factor, B-- minor factor, and C-- not a factor categorization. Percentage responses are summarized in Table 5 along with the mean response based, once again, on the A = 1, B = 2, C = 3 scale. More than 60 percent of the respondents thought both of the economic reasons to keep membership open were important factors, and the Rochdale principle of open membership as a matter of cooperative philosophy was found to be important by 54 percent of the respondents.

Representative comments of respondents concerning the rationale for open membership included:

- o We have a limited market; more members gives us more price control; more volume gives us credibility.

Table 5-- Reasons for open or closed membership

Factor	Important	Minor	Not a factor	Mean response <u>1/</u>
--Percentage Responses--				
Open membership:				
More members make co-op run more efficiently	60.7	14.8	9.8	1.40
More members give co-op more bargaining power	60.7	9.8	14.8	1.46
Open membership is the co-op way	54.1	13.1	18.0	1.58
Closed membership:				
More production would cause operating inefficiencies	62.5	0	37.5	1.75
Restrict volume of product on the market	16.7	0	83.3	2.67

1/ 1= important factor; 2 = minor factor; and 3 = not a factor

- o We opened membership when we realized that new members . . . did not have an adverse effect on existing members' [sales].
- o More members means more . . . income for advertising and promotion.
- o Cooperatives can most effectively control and stabilize price if most growers are members.
- o A large cooperative has better buying power than a smaller one.

Potential reasons to close membership include plant capacity limitations, quality control, and desire to restrict the flow of product on to the market. Because most of the cooperatives had open membership, response to the closed membership question was limited but, nonetheless, illuminating. More than 62 percent cited plant capacity limitations as an important factor in their decision to close the membership, while only about 17 percent cited a desire to limit access to the market. This result, in turn, affirms a conclusion from Part 1, Section IIC of our full report that volume restriction is unlikely to be feasible for an emerging cooperative.

Representative comments about the decision to close membership included:

- o Having just started operations, the demand for service exceeds our capabilities.
- o Processing plant currently at full capacity; capital costs for expansion too costly for anticipated return from product.
- o Transportation services offered now to all in the area; more expansion to off-line shippers would not help our situation.

Turning now to the issue of nonmember business discussed in Part 2, Section IA4 of the full report, 72 percent of the cooperatives accepted nonmember business. Among those accepting nonmember business, 75 percent retained the income and paid taxes on it, thus effectively using the nonmember business as a source of capital.

Respondents commented extensively on the reasons for accepting nonmember business with the responses invariably pointing to either of two sound business practices:

1. Using nonmember business to increase plant efficiency, i.e., to exploit economies of size;
2. Using nonmember business to meet sales commitments or unanticipated sales opportunities.

Representative comments on the efficiency argument included:

- o Nonmember business brings us to a level of efficient facility utilization.
- o More volume would lower unit costs.

On the idea of using nonmember business to generate flexibility in marketing cooperatives' sales, the following were representative comments:

- o Because sometimes we can use [nonmember business] to fill a gap and maintain a market.
- o To meet contract commitments that members cannot meet.
- o Cooperative will accept produce only if not available from members.
- o If we need it to satisfy customers' needs.
- o If we can make a profit on nonmember business, we do it.

Financing

Several aspects of financing interest were: sources of initial equity and debt capital, extent of use of grants, and whether a plan had been established to revolve retained equities back to members.

Thirty-nine of the cooperatives (64 percent) indicated use of membership fees or assessments to generate initial equity capital, while 26 (43 percent) reported issuing stock. Purchasing or supply cooperatives more frequently chose the stock approach than did their marketing counterparts. Several cooperatives used a combination of membership fees and stock issuances. An attempt was made generate information on the new cooperatives' sources of additional equity capital beyond the initial infusion. Response to question 20 was poor, probably because an accurate answer would have required access to financial statements, and, therefore, no worthwhile inferences could be drawn from it.

For initial debt capital, 25 percent reported borrowing from commercial banks, and only 19 (31 percent) reported borrowing from banks for cooperatives, even though the BCs usually offer somewhat lower interest rates. One possible explanation for the low use of the BCs is that they may sometimes be unwilling to accept risks of loaning to new cooperatives. Interesting to note is that 15 respondents listed access to debt financing, especially the BCs, as a very important factor in choosing a cooperative organization rather than an alternative organization form (questions 8 and 9). Thus, even though the proportion borrowing from a BC was not high, most of those who did obtain BC funding attached considerable importance to it.

Nineteen respondents (31 percent) reported obtaining loans from alternative sources. Among those who specified the source, four reported borrowing from members, and five reported receiving loans from State agencies. Five (8 percent) of the cooperatives reported having no debt at all.

Only 14 cooperatives (23 percent) reported use of grants as an initial source of funds. Our survey was unable to discern whether failure to obtain grants was due to failure to apply or to applications being rejected. Not all cooperatives listed their source of grants, but of those that did, grants came from: Federal agencies (5); State agencies (4); Tennessee Valley Authority (4); and private donors (2).

Tennessee Valley Authority's support was, of course, limited to cooperatives in its southeastern U.S. service area. All in all, the fairly limited use of grants relative to the number of possible available sources indicates that grantsmanship is an area where leaders of new cooperatives may want to focus greater attention, particularly as a source of initial capital. It should be noted, however, that obtaining grants can be time consuming and time expended on alternative activities may yield greater benefit. Moreover, because grant funds are undependable and short-term in nature, they should generally not be used for operating purposes.

Thirty-eight respondents (62 percent) indicated that their cooperative had a plan in place to revolve retained equity back to members. This figure is probably overstated to some extent because some respondents appear to have confused the payment of patronage refunds with the presence of a revolving fund. The most commonly described plan (eight cooperatives) was nonsystematic and based on the year-to-year discretion of the board of directors. Two cooperatives redeemed equities based on a member's age, 65 and 72, respectively.

Among the various systematic plans described, the time from acquisition to revolvment of the equities varied fairly evenly from 4 to 10 years. Some cooperatives with lengthy cycles, e.g., 10 years, indicated plans to speed up revolvment when the cooperative's financial health permitted it. Among the cooperatives with no plan, only a few indicated an intention to develop one.

Decision Making and Management

Concerns in decision making and management were with the information and planning that went into the decision to develop a cooperative and whether any alternatives to a cooperative were considered. The nature of voting in the cooperative and its management structure also were of interest.

A prospective advantage to starting a cooperative is that several public sources of information and expertise are available to lend assistance. These include university extension specialists, USDA's Agricultural Cooperative Service, farm advisers or county extension agents, and bank for cooperatives personnel. Private consultants, of course, are also available for a fee.

Question 10 was designed to indicate the extent to which the cooperatives made use of the various information sources.

Table 6 summarizes the results based on the A-- important source, B-- minor source, and C-- not a source categorization. The mean score reported in the table results from assigning A = 1.0, B = 2.0, C = 3.0.

The most important information source was university extension specialists, which more than one-half listed as an important source, However, private consultants ranked nearly as high, being cited as an important source by almost one-half of the respondents.

Table 6-- Information sources used in developing new cooperatives

Source	Important	Minor	Not a Source	Mean Score <u>1/</u>
	Percentage responses			
University extension specialists	52.5	9.8	37.7	1.85
Agricultural Cooperative Service	21.3	23.0	55.7	2.34
Farm advisers/county extension agents	41.0	19.7	39.3	1.98
Bank for cooperatives	29.5	8.2	62.3	2.33
Private consultants	49.2	14.8	36.1	1.87

1/ 1 = important source; 2 = minor source; and 3 = not a source

Those reporting the BCs to be an important information source coincides almost exactly with the number of cooperatives reporting BC loans, indicating that, aside from providing low-costs loans, the BCs also can provide a source of low-cost expertise.

Frequent use of expensive private consultants relative to the publicly available services that are usually free suggests that some of the new cooperative may have been overlooking the best values in terms of information and expertise.

Finally, to determine the extent of formal planning for the cooperative, question 11 asked whether a financial feasibility study had been conducted. The answer was nearly evenly split: 31 indicating "yes"; 30 reporting "no."

A cooperative is not necessarily the only organizational vehicle through which farmers can address the various elements of market failure. For example, farmers who face market power in their sales markets could in principle acquire and operate a marketing firm as either a partnership or a corporation. Special Subchapter S corporations are allowed to remit corporate income back to their shareholders for taxation in a similar manner to the tax treatment afforded cooperatives. Question 8 was intended to see if any of these organizational alternatives had been considered. Mostly the answer was "no." Only three reported considering a partnership, only three considered the Subchapter S mode, while 17 considered an ordinary corporation.

The reasons for choosing the cooperative form were requested in question

9. Although this question was to be answered only by those who actively considered alternative organizations, the number of responses to this question was somewhat greater than for question 8. Access to BC funding was listed as an important factor by 15 respondents, while 14 listed tax considerations. (Note that partnerships and Subchapter S corporations are taxed similarly to cooperatives, but income earned by ordinary corporations would be subject to double taxation.)

Six respondents cited prospective membership size as an important factor in choosing a cooperative organization. Whereas there are no numerical limits on the number of corporate shareholders or cooperative members, shareholder numbers in partnerships and Subchapter S corporations are restricted by law. A Subchapter S corporation can have no more than 35 shareholders. Only individuals, not corporations, partnerships, etc. may be shareholders in a Subchapter S corporation. There is no strict legal maximum to the number of partners in a partnership, but the law requires that the co-owners intend to actively participate in the trade or business. This provision clearly reflects a presumption that partnerships will involve a small number of co-owners.

Voting in our sample cooperatives was almost exclusively done on a one-member, one-vote basis. Only two respondents reported voting in proportion to patronage. Unless all members are similar in their volume of business, one-member, one-vote systems threaten to cause discontent among the larger members who are crucial to a cooperative's success. However, one-member, one-vote systems are mandated by State law in some cases.

For management (question 23), 21 respondents (34 percent) indicated the cooperative was managed by the producer/members, 36 (59 percent) reported full-time professional management, while 6 (10 percent) reported part-time professional management. (The percentages add to more than 100 percent due to multiple answers on a few of the forms.) Statistical analysis of the determinants of success in a new cooperative suggests that the presence of full-time professional management is an important key to success.

STATISTICAL ANALYSIS OF THE DETERMINANTS OF SUCCESS IN EMERGING
AGRICULTURAL COOPERATIVES

Success Ratings

Survey respondents were asked to rate their recently formed cooperative as either a major success, a minor success, too early to tell (about success), or not successful (questions 28 and 31 on the marketing co-op and purchasing co-op forms, respectively). The results were as follows:

	<u>Number</u>	<u>Percent</u>
Major success	28	45.9
Minor success	12	19.7
Too early to tell	10	16.4
Not successful	11	18.0

All of the cooperatives that had ceased operating were classified as not successful.

Representative comments from among those who ranked their cooperative as a major success included:

- o We have organized 50-plus small growers into a single marketing force... Sales are increasing about 25-30 percent per year and membership is growing annually. We have circumvented the...market by going direct to chain warehouses.
- o We have had two solid years with good prospects for coming years. Membership is increasing. For each of our 2 years of operation we have returned 20 percent more to our growers than the independent field price.
- o The cooperative has fulfilled its purpose for being organized--to provide goods and services to its members at competitive prices and return its profits back to its members.
- o In 10 years the cooperative has repaid all original capital loans, has good volume, quality members, good equipment and personnel, short revolving cycle, etc.

Among the comments of those less sanguine about their cooperative's success were:

- o We are getting by. Co-ops are complex like the people they comprise.
- o I believe we will find two major problems: (1) trucking has cost us too much because production was down due to the weather, and (2) it is too much for a farmer to handle management.
- o Possible new members are in a wait and see attitude, and the 5-year commitment they must make to sell all their cattle through the cooperative is hard to do.

Statistical Model of the Determinants of Success

1. Constructing a Measure of Success--No business' success is guaranteed. Bad luck, adverse economic conditions, new competition, changing consumer preferences, etc., can topple even the most carefully planned, best-run enterprise. However, as the full report describes in detail, certain economic factors and organizational, financial, and operational features will enhance a cooperative's chances for success, all else considered.

These ideas can be formalized in terms of an equation with the probability of success, a variable ranging from zero to one, being explained by economic, organizational, financial, and operational factors. However, the underlying probabilities of success or failure in an enterprise are not actually observed; rather, the outcome is observed: a successful business or one not successful.

The goal of this section is, therefore, to take the information on success or lack thereof as provided by the new cooperatives and statistically relate the successful/not-successful variable to the other economic, organizational, financial, and operational information provided. The hope is to indicate the importance of the various factors in determining success.

The statistical technique used is called logit analysis, a modification of the basic linear regression model to accommodate qualitative dependent variables such as buy/no-buy decisions, yes/no responses, or, as in this situation, the dichotomy between success and lack of success. The technique is discussed in most modern econometrics textbooks.

The first task is to construct a measure of success. Although respondents were given four success/failure categories, these must be condensed into two for present purposes. The choice made was to employ the following dichotomy: major success and not a major success. Cooperatives rated as a major success by the respondent were placed in the major success (MS) category and assigned for statistical purposes the value 1.0. All other responses, minor success, too early to tell, and not successful, were lumped into the category "not a major success," (NMS) and assigned the value 0.0.

At the outset, there appears some arbitrariness to this categorization. In particular, each cooperative's category is based on the opinion of the respondent. Others might view the matter differently. In addition, placing too-early-to-tell cooperatives in the NMS may miscategorize cooperatives ultimately destined for success.

Two factors mitigate the first problem. Multiple survey responses from the same cooperative always resulted in the same success rating, and statistical analysis of the ratings indicated no persistent bias in the response due to the position of the respondent. In particular, manager/employee respondents were not significantly more likely to rate a venture as a major success than were member/director respondents.

As to concern over miscategorizing too-early-to-tell cooperatives, evidence from the surveys tended to suggest with only a few possible exceptions that this was, in fact, an equivocal response. In other words, people choosing the too-early-to-tell category could not judge the cooperative to be a major success but believe there was still a chance to "turn the corner" to success. As such, most of the too-early-to-tell cooperatives would be appropriately placed in the not-a-major-success category.

2. Variable selection--The number of possible determinants of success included in the survey forms exceeds the number that would be prudent to include in a single equation, given the number of sample cooperatives. Our solution to this problem was to adopt a two-stage approach to the estimation. In Stage I determinants of success were classified according to whether they were economic, organizational, financial, or operations/management variables. Separate equations were estimated to relate the MS or NMS success variable to each group of determinants. The most significant determinants from the Stage I equations were used to produce a "best" model in Stage II.

Thus, we have four Stage I models. Model I relates the probability of MS to several of the economic factors summarized in Table 4. For statistical purposes, the three response categories, A, B, and C, needed to be condensed into two: thus for the following factors an indicator variable, was created, which is set equal to 1.0 for respondents who listed A-- an important factor and is set equal to 0.0 for all other responses:

- Q7a -- Price too low (high),
- Q7b -- Existing services ineffective,
- Q7c -- Variable and uncertain prices, and
- Q7d -- Undependable/nonexistent market outlet.

One other economic variable included in Model 1 was an indicator variable to discern if the type of cooperative in the sample affected the probability of success. The variable, main products marketed was set to equal to 1.0 if the cooperative marketed fruits, vegetables, or nuts and equal to 0.0 for all other cooperatives, e.g., supply and service cooperatives or other marketing cooperatives.

Model 2 includes several membership factors. Specific variables are the growth coefficient, which measures growth in membership from the initial planning stage to start up; open membership, an indicator variable set to 1.0 for cooperatives with an open membership policy, set to 0.0 otherwise; nonmember business, an indicator variable set to 1.0 if the cooperatives accepted nonmember business, set to 0.0 otherwise; and the number of members involved at the initial planning stage.

Model 3 examines the role of initial financing factors on the probability of major success. All variables in model 3 were indicator variables and included: commercial bank loan, set to 1.0 for cooperatives with a commercial bank loan, set to 0.0 otherwise; bank for cooperatives loan, set to 1.0 for cooperatives with a loan from a BC, set to 0.0 otherwise; have equity redemption plan, set to 1.0 for cooperatives with an equity redemption plan, set to 0.0 otherwise; and obtained funding from grant(s), set to 1.0 for cooperatives that obtained one or more grants, set to 0.0 otherwise.

Model 4 covers the role of operations factors including management in affecting the MS or NMS outcome. All variables in model 4 were indicator variables and included the following: feasibility study, set to 1.0 for cooperatives that reported conducting a feasibility study, set to 0.0 otherwise; full-time professional management, set to 1.0 for cooperatives with full-time professional management, set to 0.0 otherwise; manager respondent, set to 1.0 if the respondent was part of professional management, set to 0.0 otherwise; private consultants (s), set to 1.0 for cooperatives that engaged a private consultant, set to 0.0 otherwise; and public consultants (s), set to 1.0 for cooperatives that used one or more public consultants, set to 0.0 otherwise.

3. Results--Results from estimating the four Stage I models are reported in Table 7. To interpret the results, note that the estimated coefficient measures each factor's effect on the probability of a major success based on the data. Therefore, factors with a positive coefficient are associated with an increasing probability of a MS, while factors with a negative coefficient are associated with a decreasing probability of a MS.

However, the coefficients reported in Table 7 are only estimates that may well deviate from the "true" value. The "absolute t-statistic" column in the table provides information on the amount of confidence to be placed in any estimated coefficient. In general, little confidence can be placed on estimated coefficient that have a small (close to zero) t-statistic. Confidence in the estimate increases for larger t-statistics. One rule-of-thumb is that for t-values greater than 1.65, we can safely assume the true effect is not zero with 90 percent confidence. All t-statistics that meet this cutoff are noted with an asterisk in the table.

Another feature of Table 7 is the likelihood ratio test statistic reported for each model. This statistic measures the statistical significance of the overall model, not any one particular variable in the model. Once again, the larger the value of the statistic the more confident we can be that there is some significant power in the model to explain the MS, NMS dichotomy. Values of the statistic that meet the 90-percent confidence level cutoff are noted with an asterisk.

Table 7-- Stage I Logit analysis of success probability

Model/variable		Estimated coefficient	Absolute t-statistic
1.	Economic factors		
	Price too low (high)	0.036	0.065
	Existing services ineffective	-0.339	0.642
	Variable and uncertain prices	0.173	0.304
	Undependable/nonexistent outlet	-0.377	0.687
	Main products marketed	-0.306	0.564
	Constant	0.312	0.474
	Likelihood ratio test		1.275
2.	Membership factors		
	Growth coefficient	-1.015	1.633
	Open membership	1.025	1.466
	Nonmember business	1.286	1.826*
	Number of members at initial planning stage	0.053	2.446*
	Constant	-2.110	2.149*
	Likelihood ratio test		12.445*
3.	Financing factors		
	Commercial bank loans	-0.333	0.498
	Bank for cooperatives loan	0.239	0.372
	Have equity redemption plan	1.271	2.049*
	Obtained funding from grant (s)	0.338	0.501
	Constant	-1.058	2.009*
	Likelihood ratio test		6.596
4.	Operations/management factors		
	Feasibility study	-1.332	1.993*
	Full-time professional management	2.404	3.183*
	Manager respondent	0.159	0.235
	Private consultants(s)	-0.469	0.752
	Public consultant(s)	0.210	0.282
	Constant	-0.990	1.231
	Likelihood ratio test		17.762*

*Indicates statistical significance at the 90-percent level.

Turning to the individual models, Model 1, economic factors, performed the poorest. None of the estimated coefficients nor the overall model met the 90-percent confidence level cutoff. These results do not mean that the economic factors are not crucial to success. Rather, they probably indicate that the economic conditions are all of nearly equal importance and are thus unable to help explain the dichotomy between MS and NMS.

Model 2, membership factors, did do a good job of explaining success. The overall model meets the test of statistical significance as do most of the individual coefficients. All have the expected signs. Open membership and using nonmember business are both positively associated with MS. This result probably reflects the overriding importance for new cooperatives of generating as large a business volume as possible to exploit the available economies of size in production and marketing.

Model 2 also indicates that the greater the number of members involved in the initial planning stages, the more likely is success. More involvement means that the organizing costs are spread across a greater number of people, so no one bears too large a burden. The sign of the growth coefficient (GC) reflects the importance of expanding the membership beyond the initial coalition prior to start up--smaller values for GC are associated with the larger rates of membership growth. Thus, the negative sign on GC means that the greater the growth rate, the more likely is success.

Model 3, financing factors, overall did not quite meet the 90- percent significance level cutoff but contains some illuminating results, nonetheless. Debt financing from a commercial bank was negatively associated with the success probability while bank for cooperatives funding was positively associated with success. Although neither coefficient meets the 90-percent significance test, the results do provide some evidence to support the importance to new cooperatives of exploring the advantage of BC funding. It should be noted, however, that the positive correlation between BC funding and success may result from the BCs' willingness to loan to only the potentially most successful cooperatives.

Also positively correlated with success, though not statistically significant, was the variable indicating receipt of one or more external grants. Finally, presence of an equity redemption plan was positively and significantly correlated with success. This result probably reflects both the good member relations aspects of having a visible plan in place and the fact that the stronger cooperatives were most likely to have a plan.

Model 4, operations/management factors, was also a quite successful model, easily meeting the 90-percent cutoff for overall statistical significance. The key variable in the model is the one indicating presence of full-time professional management. It is positively correlated with success and is highly significant.

Also interesting to note is that use of public consultants was positively correlated with success while use of private consultants was negatively correlated with success. Although neither coefficient met the statistical significance test, they do provide some evidence on the efficacy of taking advantage of the publicly available expertise.

We note that manager respondents were somewhat more likely to judge a new cooperative to be a MS than were member/directors. However, both the coefficient and its t-value are very small, prompting our earlier conclusion that position of the respondent did not significantly bias the surveys.

Finally, the negative sign on the variable indicating that a feasibility study was conducted is an anomaly. Clearly conducting a feasibility study should not diminish success prospects. It may be that feasibility studies were commissioned only in those cases where success prospects were most dubious, thus ultimately leading to the negative correlation between MS and a feasibility study.

Table 8 contains the estimation results for the Stage II "best" explanatory model of the MS, NMS dichotomy. Factors chosen from the Stage I models were the following membership factors: growth coefficient, number of members at the initial planning stage, and use of nonmember business. Also included were the variables indicating presence of an equity redemption plan and full-time professional management. The respondent's position variable was also included to control for any biases caused by that factor.

As Table 8 indicates, the Stage II model performs quite well, easily meeting the standard for overall significance. All individual factors have the expected signs with the variable indicating presence of an equity redemption plan and full-time professional management meeting the statistical significance cutoff and the variable indicating the number of members at the initial planning stage only narrowly missing the cutoff. The "R2" statistic indicates that this model explains about 30 percent of the variation between MS and NMS found in the sample, a good performance by logit model standards.

CONCLUSIONS AND RECOMMENDATIONS

Cooperatives have been an important part of America's agricultural economy, and they no doubt will continue to play a major role as agriculture prepares to face the demands and challenges of the twenty-first century. However, to retain their vitality, cooperatives must be flexible and in step with the modern, evolving economy.

In focusing on the role that cooperatives can play in the modern economy, this study has confirmed some traditional maxims for cooperatives' behavior but has also presented some ideas at odds with traditional wisdom. Main conclusions and recommendations are presented in 10 steps to success to be followed more or less in sequence.

Table 8-- Stage II Logit analysis of success probability

Variable	Estimated coefficient	Absolute t-statistic
Growth coefficient	-0.573	0.884
Number of members at initial planning stage	0.035	1.561
Nonmember business accepted	0.756	0.991
Have equity redemption plan	1.163	1.695*
Have full-time professional management	1.256	1.773*
Respondent's position in co-op	0.259	0.389
Constant	-2.580	2.665
Likelihood ratio test	18.197*	

*Indicates statistical significance at the 90 percent level.

Step 1: Analyze market conditions with a keen understanding of what cooperatives can and cannot do. Do not waste time and money on organizing a cooperative when markets already perform reasonable well.

Step 2: If a determination is made based on the criteria described in the full report that a cooperative can potentially generate net benefits to farmers, conduct a feasibility study questioning whether sufficient membership, business volume, and equity capital can be obtained to realize these benefits.

Step 3: If Step 2 generates an affirmative response, organize the cooperative to maximize membership size and build commitment among members. Be flexible in financing arrangements and voting procedures to achieve the first objective. Use long-term member contracts with stiff penalties for violations to achieve the latter.

Step 4: Carefully estimate the new cooperative's business volume and plan capital facilities that will efficiently handle that volume.

Step 5: If possible, hire a full-time professional manager to run the operation.

Step 6: Finance initial capital outlays and generate a sufficient equity base by using flexible membership fees and, possibly, grants. Obtain debt capital if possible through the banks for cooperatives or industrial development bonds.

Step 7: Develop a plan to refund retained equities back to members.

Step 8: Establish pricing policies that exploit cooperatives' built-in flexibility in pricing. If possible, approximate the optimal prices to members using the procedures set forth in Part 2, Section IIIA of the full report.

Step 9: Carefully consider membership policies. The full report discusses prospective advantages and disadvantages to open versus closed membership and to accepting or refusing to accept nonmember business. Determine which considerations are dominant for each particular situation.

Step 10: Always remember the relative strengths and weaknesses of cooperatives as a business organization. The strengths include harmonization of trade, ease of communication, pricing flexibility, and government policies that are beneficial to cooperatives. The main weaknesses of cooperatives are their difficulty in obtaining equity capital and their failure to reward entrepreneurial activity. Cooperatives may also be less flexible than other business organizations owing to their democratic nature. Exploit the strengths and take steps to overcome the weaknesses.

APPENDIX

Appendix:
The Survey Instruments

Included below is a composite version of the survey forms sent to active marketing and active purchasing cooperatives. Many questions were the same for both types of cooperatives and in these cases we include only one set of questions.

1a. Name of cooperative _____

1b. Address of cooperative _____

2a. Name and telephone number of respondent _____

2b. Respondent's position (past and/or present) in the cooperative _____

3. In what year did active planning for the cooperative begin? _____

4. How many producers were involved in the initial planning stage? _____

5. In what year did the cooperative begin actual operation? _____

6a. How many members were there at the time of initial operation? _____

6b. If (6a) differs from (4), how were additional members recruited?

7a. **MARKETING COOPERATIVE FORM ONLY.** We are interested in the factors that led to forming the cooperative. We have listed several possible deficiencies in the prevailing (precooperative) marketing arrangements. For each, please indicate if it was A. an important factor, B. a minor factor, or C. not a factor in the decision to form a cooperative. For important and minor factors, please explain the circumstances, if possible.

a. prices were too low A B C

b. marketing services were not performed effectively A B C

c. prices were subject to too much variability or uncertainty A B C

d. marketing outlet did not exist or was undependable A B C

e. individual farmers lacked bargaining power A B C

f. other (please list) A B

g. other (please list) A B

7b. PURCHASING COOPERATIVE FORM ONLY. We are interested in the factors that led to forming the cooperative. We have listed several possible deficiencies in the prevailing (precooperative) supply or service arrangements. For each, please indicate if it was A. an important factor, B. a minor factor, or C. not a factor in the decision to form a cooperative. For important and minor factors, please explain the circumstances, if possible.

a. prices were too high A B C

b. supplies and/or services were not of desired quality A B C

- c. prices were subject to too much variability or uncertainty
A B C

- d. needed supplies and/or services were unavailable or their
supply was uncertain A B C

- e. other (please list) A B

- f. other (please list) A B

8. Were other organizational forms considered?

- a. partnership [yes no]
b. subchapter S corporation [yes no]
c. ordinary corporation [yes no]
d. other (please specify) _____

9. If alternative organizations were considered, why was the co-op
form chosen? Some possible reasons are listed below. Please
indicate for each if it was A. an important factor, B. a minor
factor, or C. not a factor.

- a. tax considerations A B C
b. access to debt financing, e.g., bank for cooperatives A B C
c. size of membership precluded use of other forms A B C
d. other (please specify) _____ A B C

10. Several sources are available to provide information or consulting to farmers considering forming cooperatives. For each source listed below please indicate if it was A. an important source, B. a minor source, or C. not a source of information or consulting.
- a. university extension specialists A B C
 - b. USDA (Agricultural Co-op Service) A B C
 - c. farm advisors/county extension agents A B C
 - d. bank for cooperatives A B C
 - e. private consultants, e.g., lawyers, accountants A B C
 - f. other (please specify) _____ A B
11. Were any financial feasibility studies conducted? [Yes No] If yes, please explain the nature of the study and by whom it was conducted. _____
12. How was start-up equity capital obtained?
- a. none _____
 - b. members [Yes No]
 - 1. fees
 - 2. assessments
 - 3. stock
 - c. other [Yes No] If yes, please explain _____
13. How was start-up debt capital obtained?
- a. commercial bank [Yes No]
 - b. bank for cooperatives [Yes No]
 - c. other (please specify) _____
14. Were grants an important initial source of funds? [Yes No] If so, please list the grant sources _____
15. How many members does the co-op currently have?
- 16a. Is the membership open now? [Yes No]
- 16b. Was membership open in the past? [Yes No] If yes, during what time period? _____

17a. (To be answered only if the membership is currently open.) Some possible advantages of maintaining open membership are listed below. Please indicate for each if it is A. an important factor, B. a minor factor, or C. not a factor in the decision to maintain open membership. Please briefly explain your answer, if possible.

a. more members and a larger operation make the co-op run more efficiently, i.e., at lower per units costs A B C

b. more members and greater volume give the co-op more bargaining power A B C

c. open membership is the co-op way of doing business A B C

d. other (please list) A B

17b. MARKETING COOPERATIVE FORM ONLY. To be answered only if the membership is currently closed.) Some possible advantages of maintaining a closed membership are listed below. Please indicate for each if it is A. an important factor, B. a minor factor, or C. not a factor in the decision to close the membership. Please briefly explain your answer if possible.

a. physical plant and marketing facilities are currently maintained at efficient capacity--more production would introduce inefficiencies A B C

- b. the volume of product placed on the market is restricted by closing the membership A B C

- c. other (please list and explain)

- 17c. PURCHASING COOPERATIVE FORM ONLY. (To be answered only if the membership is currently closed.) Some possible advantages of maintaining a closed membership are listed below. Please indicate for each if it is A. an important factor, B. a minor factor, or C. not a factor in the decision to close the membership. Please briefly explain your answer if possible.

- a. physical plant facilities are currently maintained at efficient capacity--more production providing a larger volume of supplies and/or services would introduce inefficiencies
A B C

- b. other (please list and explain) A B

18. Is nonmember business accepted? [Yes No] Why or why not?

19. (To be answered only if nonmember business is accepted.) Does the cooperative retain and pay taxes on earnings from nonmembers?
[Yes No]

20. Listed below are commonly used methods for cooperatives to acquire additional capital. For each source, please indicate the percentage of total equity capital that currently comes from each source.

a. annual or other periodic membership fees	_____ %
b. required stock purchases for existing members	_____ %
c. initial fees from new members	_____ %
d. initial stock purchases by new members	_____ %
e. per unit retains	_____ %
f. retained patronage funds	_____ %
g. other (please list) _____	_____ %
h. other (please list) _____	_____ %

21a. Is a plan in place to revolve equity back to members? [Yes No]
If yes, please explain briefly how it works. If no plan exists
are there plans to develop one? _____

21b. Do members earn interest on their equity contributions? [Yes No]
If yes, at what rate? _____

22. How is voting conducted? (please check appropriate selection)

a. one person one vote _____
b. in proportion to patronage _____
c. other (please explain) _____

23. How is the cooperative managed? (please check appropriate selection)

a. producer managed _____
b. professional management--full time _____
c. professional management--part time _____
d. other (please explain) _____

24a. MARKETING COOPERATIVE FORM ONLY. What are the main products marketed? _____

24b. PURCHASING COOPERATIVE FORM ONLY. What are the main products and services supplied? _____

25. MARKETING COOPERATIVE FORM ONLY. Does the co-op assume ownership (take title) of the products marketed, or does it act only as a selling agent? [ownership selling agent]

26. MARKETING COOPERATIVE FORM ONLY. Several types of buyers are listed below. For each type, please indicate if it is typically A. important direct source of sales, B. a minor direct source of sales, or C. not a direct source of sales.

- a. processors A B C
- b. wholesalers A B C
- c. institutions (e.g., hospitals) A B C
- d. retail stores A B C
- e. restaurants A B C
- f. consumers A B C
- g. other A B

27. MARKETING COOPERATIVE FORM ONLY. In addition to selling, does the co-op A. generally perform, B. occasionally perform, or C. not perform the following marketing services.

- a. pick up (assembly) of product from farms A B C
- b. grading/sorting A B C
- c. processing A B C
- d. other (please list) _____ A B
- _____ A B

28. About how many other companies compete in these same markets?

29. How many, if any, of the competing companies are cooperatives?

30. Please briefly describe the nature of competition in these markets? For example, are relations between cooperatives different than relations between cooperatives and non-cooperatives?

31. At the present time, would you rate the co-op venture a success? [major success minor success not successful too early to tell] Please explain your answer.

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